

## CLAIMS

What is claimed is:

1. A method of debugging a system by analyzing transactions of a serial intra-system bus comprising the steps of:

5 capturing frames of a serial intra-system bus in a capture data file;  
extracting frames from the capture data file;  
checking frames for out-of-bounds addresses;  
decoding an address of frames to identify a particular slave device;  
tracking state changes indicated in frames with a computer model of the slave device;

10 and

recording state error information when state changes indicated in frames are not permissible state changes of the computer model.

2. The method of Claim 1, further comprising the step of assembling packets that are encapsulated in the frames.

15 3. The method of Claim 2, further comprising the step of validating assembled packets.

4. The method of Claim 3, further comprising the step of determining if the state changes are permissible state changes.

5. The method of Claim 4, wherein the step of determining if the state changes  
20 are permissible state changes is performed by tracking state changes indicated in the assembled packets in a protocol model, and comparing state changes against permitted state changes of the model.

6. A memory device containing machine readable code for analyzing captured frames from a serial intra-system bus, the machine readable code comprising code for:

25 extracting frames from the capture data file;  
checking frames for out-of-bounds addresses;  
decoding an address of frames to identify a particular slave device;  
tracking state changes indicated in frames with a computer model of the slave device;  
and

30 recording state error information when state changes indicated in frames are not permissible state changes of the computer model.

7. The method of Claim 6, further comprising the step of assembling packets that are encapsulated in the frames.

8. The method of Claim 7, further comprising the step of validating assembled packets.

5           9.       The method of Claim 8, further comprising the step of determining if the state changes are permissible state changes.

10. The method of Claim 9, wherein the step of determining if the state changes are permissible state changes is performed by tracking state changes indicated in the assembled packets in a protocol model, and comparing state changes against permitted state changes of the model.

[illegible]